

STM32WL3x Nucleo-64 boards



NUCLEO-WL33CCx global view.
Picture is not contractual.

Product status link

[NUCLEO-WL33CC1](#)

[NUCLEO-WL33CC2](#)



Features

- Ultra-low-power wireless **STM32WL33CCV6** microcontroller based on the Arm® Cortex®-M0+ core, with 256 Kbytes of flash memory and 32 Kbytes of SRAM in a VFQFPN48 package featuring:
 - Ultra-low-power MCU
 - Sub-GHz transceiver with IPD front end optimized for 413-479 MHz or 826-958 MHz frequency bands, supporting OOK, ASK, 2(G)FSK, 4(G)FSK, D-BPSK, and DSSS modulations
 - Compatible with proprietary and standardized wireless protocols such as WM-Bus, Sigfox™, mioty, KNX-RF, and IEEE 802.15.4g
 - Low-power autonomous wake-up receiver
- Delivered with SMA antenna
- Three user LEDs
- Three user and one reset push-buttons
- Board connectors:
 - USB Type-C®
 - ARDUINO® Uno V3 expansion connector
 - ST morpho extension pin headers for full access to all MCU I/Os
- Flexible power-supply options: ST-LINK USB V_{BUS} or external sources
- On-board STLINK-V3EC debugger/programmer with USB re-enumeration capability: mass storage, Virtual COM port, and debug port
- Comprehensive free software libraries and examples available with the **STM32CubeWL3** MCU Package
- Dedicated software tool to control and test radio transceiver
- Support of a wide choice of Integrated Development Environments (IDEs) including IAR Embedded Workbench®, MDK-ARM, and STM32CubeIDE

Description

The STM32WL3x Nucleo-64 boards based on the MB1801 mezzanine board and MB2029 MCU RF board (**NUCLEO-WL33CC1** and **NUCLEO-WL33CC2** order codes) embed the **STM32WL33CCV6** sub-GHz application processor. This high-performance and low-power application processor can operate in 433, 868, and 915 MHz bands.

The ARDUINO® Uno V3 connectivity support and the ST morpho headers provide an easy means of expanding the functionality of the STM32 Nucleo open development platform with a wide choice of specialized shields.

The STM32WL3x Nucleo-64 boards are supplied with a dedicated software package, HAL library, and various packaged software examples available with the **STM32CubeWL3** MCU Package.

The boards are declined in two product variants with dedicated front ends tuned for specific frequency bands.

1 Ordering information

To order an STM32WL3x Nucleo-64 board, refer to [Table 1](#). For a detailed description, refer to the user manual on the product web page. Additional information is available from the datasheet and reference manual of the target microcontroller.

Table 1. List of available products

Order code	Board reference	User manual	Target STM32	Differentiating feature
NUCLEO-WL33CC1	<ul style="list-style-type: none"> MB1801⁽¹⁾ MB2029-Highband-Bxx⁽²⁾ 	UM3418	STM32WL33CCV6	Front end optimized for 826-958 MHz high band at 16 dBm
NUCLEO-WL33CC2	<ul style="list-style-type: none"> MB1801⁽¹⁾ MB2029-Lowband-Bxx⁽²⁾ 			Front end optimized for 413-479 MHz low band at 16 dBm

1. Mezzanine board

2. MCU RF board. Bxx stands for BOM revision.

1.1 Product marking

The stickers located on the top or bottom side of all PCBs provide product information:

- First sticker: product order code and product identification, generally placed on the main board featuring the target device.

Example:

Product order code Product identification
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- Second sticker: board reference with revision and serial number, available on each PCB.

Example:

MBxxxx-Variant-yyz syywwxxxxx	
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On the first sticker, the first line provides the product order code, and the second line the product identification.

On the second sticker, the first line has the following format: “MBxxxx-Variant-yyz”, where “MBxxxx” is the board reference, “Variant” (optional) identifies the mounting variant when several exist, “y” is the PCB revision, and “zz” is the assembly revision, for example B01. The second line shows the board serial number used for traceability.

Products and parts labeled as “ES” or “E” are not yet qualified or feature devices that are not yet qualified. STMicroelectronics disclaims any responsibility for consequences arising from their use. Under no circumstances will STMicroelectronics be liable for the customer's use of these engineering samples. Before deciding to use these engineering samples for qualification activities, contact STMicroelectronics' quality department.

“ES” or “E” marking examples of location:

- On the targeted STM32 that is soldered on the board (for an illustration of STM32 marking, refer to the STM32 datasheet *Package information* paragraph at the www.st.com website).
- Next to the evaluation tool ordering part number that is stuck, or silk-screen printed on the board.

Some boards feature a specific STM32 device version, which allows the operation of any bundled commercial stack/library available. This STM32 device shows a “U” marking option at the end of the standard part number and is not available for sales.

To use the same commercial stack in their applications, the developers might need to purchase a part number specific to this stack/library. The price of those part numbers includes the stack/library royalties.

1.2 Codification

The meaning of the codification is explained in Table 2.

Table 2. Codification explanation

NUCLEO-XXYYZTN	Description	Example: NUCLEO-WL33CC1
XX	MCU series in STM32 32-bit Arm Cortex MCUs	STM32WL series
YY	MCU product line in the series	STM32WL3x product line
Z	STM32 package pin count: • C for 48 pins	48 pins
T	STM32 flash memory size: • C for 256 Kbytes	256 Kbytes
N	Frequency band: • 1: 826-958 MHz high-frequency band • 2: 413-479 MHz low-frequency band	High-frequency band

2 Development environment

STM32 32-bit microcontrollers are based on the Arm® Cortex®-M processor.

Note: Arm is a registered trademark of Arm Limited (or its subsidiaries) in the US and/or elsewhere.



2.1 System requirements

- Multi-OS support: Windows® 10, Linux® 64-bit, or macOS®
- USB Type-A or USB Type-C® to USB Type-C® cable

Note: macOS® is a trademark of Apple Inc., registered in the U.S. and other countries and regions.

Linux® is a registered trademark of Linus Torvalds.

Windows is a trademark of the Microsoft group of companies.

2.2 Development toolchains

- IAR Systems® - IAR Embedded Workbench®⁽¹⁾
- Keil® - MDK-ARM⁽¹⁾
- STMicroelectronics - STM32CubeIDE

1. On Windows® only.

Revision history

Table 3. Document revision history

Date	Revision	Changes
04-Oct-2024	1	Initial release.
20-Nov-2024	2	Updated band frequency ranges.



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